

The Zimbelstern-Firshman in St Peter's Church, Great Berkhamsted

The Zimbelstern is a traditional organ stop originating in Europe, especially Germany, from the 16th century.



The name means literally 'tinkling star' in German and describes it perfectly. There are many incarnations, but all use high pitch bells (often six and usually roughly tuned to particular notes, as in our version) and a visible rotating device - traditionally, as in ours, a star.

It is traditionally played at important services, especially during the Gloria at the Easter Vigil. It is also often played during grand organ pieces, especially by JS Bach.

Although usually not finely tuned (as in ours), the bells do approximate to actual notes. As they are played relatively fast and repeated, the sound complements the overall organ sound in a remarkably effective way.

The project started when Jonathan Lee, organist at St Peter's approached me, and wondered if I might be interested in making one. I had been involved in a number of organ projects, not least making a pedal board for the Bryceson organ to allow it to replace the main organ during restoration works, so of course I said yes.

A redundant pew from St Peter's provided most of the oak for the construction. There are traditionally two basic designs. One is based on a roundabout, but that does not easily lend itself to a visible star. The linear design makes it much easier to incorporate a star, so I used this method. It consists of an threaded axle which is turned by a motor. Eccentric oak cams are bolted on to move clappers which hit fixed bells in succession. One design I found was annotated in German. When translated, they said they obtained the bells from an 'agricultural establishment' - ie cowbells! I unearthed a German company (Aug Laukhuff) who sell specialist brass bells designed especially for the Zimbelstern. Even the smallest bells are 10mm thick. This is so they do not distort in use. The bells are only tuned roughly but still cost over £300 for the set of six. Tuned bells would have cost over £1500! The sound from the untuned bells is fine, as the sound is an effect and not really meant to tune in with what is being played on the organ.



I tried steel clappers but the sound was not good. I got specialist brass clappers from the Whitechapel Bell Foundry. They said the best sound is when the clapper material is identical to the bell material. They were right, and the sound is bright and clear. The axle extends out at one end outside the front of the organ, and the star is bolted to that. Again the star was mainly made with oak from the old pew. I had to use scrap floor oak for the painted raised centre. The colours were chosen from Humbrol enamel to match the existing red and blue of the organ pipes. This was guesswork of course, but the match is amazingly good. The base of the star is faced with 23.5 carat gold leaf. The rear is left bare and stained/waxed, to show it really is oak!

The strips of oak holding the clappers are supported by strips of leather (from a dog lead). They needed to be sprung, and I have used strips of steel from a wide hacksaw blade. The clappers hang free. When they strike, the support hits a stop, and the clapper

then carries on under its own momentum to hit the bell. The stops (as well as the hanger fulcrum) are adjustable. The shaft is a threaded 10mm rod. I have no idea why I bought it in the late 70s, and had forgotten about it. However I saw it during construction and it is perfect for the job. I had to buy many more nuts, and two of them cost as much as the entire rod did in the 70s! I cut it at the star end. The removed stub was fixed to the star. It was passed through a hole in the facing decoration of the organ, and fixed back with a threaded joining piece. It is fixed with two lock nuts. The star is screwed directly onto the shaft stub via a threaded hole in the oak, with glue in the threads. There is also a lock nut and washer again with glue reinforcement. Jon is keen not to be decapitated!



Speed controller

The renovated 12v drive motor, made by Lucas, is from a motor vehicle - probably a van or truck. It drives the axle via a flexible belt. Speed is controlled by a PCM (pulse code modulation) device. This ensures more power at lower speeds, as it always supplies a full 12v. 12v power is turned on and off using a flip-flop circuit, via a foot pedal, which matches the existing ones. Two vehicle ball races were set in the oak frame and bolted each side to the centre axle. This is wildly over-engineered and should last millennia!

Go to <http://tinyurl.com/zimbelstern>
to see video of it in action:

Tony Firshman 2014

